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| EXAMINER | |
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| DUDEK JR, EDWARD J | |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/552,815 | KELLY ET AL. | |
| | Examiner | Art Unit | |
| | Edward J. Dudek | 2186 | |

***-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --***

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *15 May 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-7,10-14,16,18-20 and 22-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,10-14,16,18-20 and 22-24* is/are rejected.

7)☒ Claim(s) *25* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

This Office Action is responsive to the request for continued examination filed on 15 May 2009 in application #10/552,815.

Claims 1-7, 10-14, 16, 18-20, and 22-25 are pending and have been presented for examination.

Claims 8-9, 15, 17, and 21 have been cancelled.

### *Continued Examination Under 37 CFR 1.114*

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 15 May 2009 has been entered.

### *Response to Arguments*

Applicant's arguments filed 15 May 2009 have been fully considered but they are not persuasive.

Applicant argues "It is respectfully submitted that the Fujimoto non-volatile flash memory has nothing to do and does not disclose or suggest a record carrier. A record carrier is different from a flash memory and thus presents different considerations." Applicant further argues "Storing static data structures of the first file system in a file on the record carrier reduces the need to frequent updates, thus reducing the likelihood

that the record carrier will run out of cycles for rewriting. No such recyclability issue is present for the Fujimoto non-volatile flash memory. Fujimoto is completely silent about any record carrier, and is oblivious to any recyclability issues."

The Examiner respectfully disagrees. While Fujimoto does not disclose the record carrier as claimed, Fujimoto is relevant to some of the techniques used for writing to the claimed record carrier. The other references are cited for disclosing a record carrier as claimed. The claimed record carrier allows data to be stored, and then have the stored data updated or have more data added to the record carrier. Each time new data is added or current data is updated the mapping structures must be updated. This presents a problem since, as in the case of Fujimoto, non-volatile memory has a limited write-erase cycle, and also non-volatile memory is slower than RAM. The solution to this is to store these data structures that are updated frequently in the RAM so as to speed up the update time, and to also reduce the amount of re-writes that must occur to the flash memory. Therefore there is a recyclability issue present in Fujimoto, and there is a technique presented for dealing with this issue, the same as the claimed invention. Since both the claimed invention and the teachings of Fujimoto deal with a storage medium that has a limited number of erase cycles, and also both mediums have a slower access speed than volatile memory, the teachings of Fujimoto are relevant and in the same field of invention and it would have been obvious to one of ordinary skill in the art to have made the combination.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 4-6, 10-13, 16, and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bradley (U.S. Patent Application Publication #2002/0065810) in view of Fujimoto (U.S. Patent #6,377,500) and Universal Disk Format (http://www.absoluteastronomy.com/topics/Universal_Disk_Format).

As per claim 1: Bradley discloses a drive device for a record carrier, said drive device comprising: interface means for providing a first format for inputting or outputting data according to a first file system **(see figure 6, element 604 and [0130])**; and mapping means for mapping said first format to a second format according to a second file system used on said record carrier **(see [0132])**; wherein said mapping means is adapted to reserve space on the record carrier for an image of said first file system in the logical specification of said second format **(see [0096]-[0100])**, wherein said mapping means is further adapted to split said image of said first file system into different categories based on properties of data structures, and to store said different categories in different files of said second file system **(see [0034] and [0044]-[0045])**, and wherein said mapping means is arranged to mount said second file system on said record carrier and to translate said second file system in a memory means into

equivalent structures of said first file system **(see [0133])**. Bradley fails to disclose wherein said mapping means is arranged to store static data structures of said first file system in a file on said record carrier and volatile data structures of said first file system in said memory means. Fujimoto discloses that as the addressable size of memory increases, so must the data structures that map logical addresses to physical addresses. And also, this mapping structure is stored in RAM, volatile memory, to allow fast access to the data structure and to allow changing the data structure easier and faster. Since the available space in RAM is limited, and the memory is expensive, there will be a point where it is no longer feasible to keep increasing the amount of available RAM to hold the mapping tables (see column 1, line 40 thru column 2, line 15). Therefore, Fujimoto maintains multiple mapping tables and enough RAM space to hold at least one, but fewer than all, of the mapping tables. The table that is currently being used to perform mapping functions is stored in the RAM, since this table requires fast access and could change based on the manipulations to the files. The remaining tables are stored in the non-volatile memory, since they are not needed and therefore would waste valuable memory resources. It would have been obvious to a person having ordinary skill in the art to which said subject matter pertains to have modified the system disclosed by Bradley, to store the volatile data structures in memory, to allow fast access to the data structures that are currently being used and may change rather than waiting for the changes to be written to the secondary storage, and to stored the data structures that are not being used and will not change in the non-volatile storage so as not to waste valuable memory resources, as taught by Fujimoto. The combination of

Bradley and Fujimoto still fail to disclose said mapping means is further adapted to shift a location of frequently updated data on said record carrier. The Universal Disk Format (UDF) contains a technique in which wear leveling is implemented. A VAT build of UDF was released that performs this wear leveling. Optical media has a limited number of times in which each sector can be erase and rewritten. After this time has passed, the sector will start to wear out and the data stored there will be unreliable. VAT spreads out the writing across the disk to evenly wear the disk to get the most writes, and rewrites, possible. The frequently updated data therefore get shifted around on the disk to implement this wear leveling (see pages 3-5). It would have been obvious to a person having ordinary skill in the art to which said subject matter pertains to have modified the system disclosed by Bradley and Fujimoto, to shift the frequently updated data on the record carrier to implement a type of wear leveling so as not to wear our the sectors by repeated updates, as disclosed by UDF.

As per claim 4: wherein said first file system is a FAT file system **(see [0041])**.

As per claim 5: Bradley discloses a drive device for a record carrier, said drive device comprising: interface means for providing a first format for inputting or outputting data according to a first file system **(see figure 6, element 604 and [0130])**; and mapping means for mapping said first format to a second format according to a second file system used on said record carrier **(see [0132])**; wherein said mapping means is adapted to reserve space on the record carrier for an image of said first file system in the logical specification of said second format **(see [0096]-[0100])**, wherein said

mapping means is further adapted to split said image of said first file system into different categories based on properties of data structures, and to store said split file components in different files of said second file system **(see [0034] and [0044]-[0045])**, and wherein said mapping means is arranged to mount said second file system on said record carrier and to translate said second file system in a memory means into equivalent structures of said first file system **(see [0133])**. Bradley does not explicitly disclose said second file system is a UDF file system. Bradley discloses that the system is capable of using multiple types of media for storage **(see [0114])**, and that the file system translator is a superset of all known file systems and is capable of translating a request from any consumer I/O file system to the file system of the storage medium **(see [0134])**. There are a limited number of file systems in existence, each one providing certain advantages and disadvantages. UDF file systems are typically used with optical mediums, e.g., CD-ROM. Since an optical medium could be used with this system it would have been obvious to a person of ordinary skill in the art to use a UDF file system to store data on the storage medium. "When there is a design need for market pressure to solve a problem and there are a finite number if identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp." *KSR*, 82 USPQ2d at 1397. Bradley fails to disclose wherein said mapping means is arranged to store static data structures of said first file system in a file on said record carrier and volatile data structures of said first file system in said memory means. Fujimoto discloses that as the addressable size of memory increases, so must the data structures that map logical addresses to physical

addresses. And also, this mapping structure is stored in RAM, volatile memory, to allow fast access to the data structure and to allow changing the data structure easier and faster. Since the available space in RAM is limited, and the memory is expensive, there will be a point where it is no longer feasible to keep increasing the amount of available RAM to hold the mapping tables (see column 1, line 40 thru column 2, line 15). Therefore, Fujimoto maintains multiple mapping tables and enough RAM space to hold at least one, but fewer than all, of the mapping tables. The table that is currently being used to perform mapping functions is stored in the RAM, since this table requires fast access and could change based on the manipulations to the files. The remaining tables are stored in the non-volatile memory, since they are not needed and therefore would waste valuable memory resources. It would have been obvious to a person having ordinary skill in the art to which said subject matter pertains to have modified the system disclosed by Bradley, to store the volatile data structures in memory, to allow fast access to the data structures that are currently being used and may change rather than waiting for the changes to be written to the secondary storage, and to stored the data structures that are not being used and will not change in the non-volatile storage so as not to waste valuable memory resources, as taught by Fujimoto. The combination of Bradley and Fujimoto still fail to disclose said mapping means is further adapted to shift a location of frequently updated data on said record carrier. The Universal Disk Format (UDF) contains a technique in which wear leveling is implemented. A VAT build of UDF was released that performs this wear leveling. Optical media has a limited number of times in which each sector can be erase and rewritten. After this time has passed, the

sector will start to wear out and the data stored there will be unreliable. VAT spreads out the writing across the disk to evenly wear the disk to get the most writes, and rewrites, possible. The frequently updated data therefore get shifted around on the disk to implement this wear leveling (see pages 3-5). It would have been obvious to a person having ordinary skill in the art to which said subject matter pertains to have modified the system disclosed by Bradley and Fujimoto, to shift the frequently updated data on the record carrier to implement a type of wear leveling so as not to wear our the sectors by repeated updates, as disclosed by UDF.

As per claim 6: wherein said record carrier is an optical disk **(see [0114], an optical disk is capable of storing data)**.

As per claim 10: Bradley discloses a drive device for a record carrier, said drive device comprising: interface means for providing a first format for inputting or outputting data according to a first file system **(see figure 6, element 604 and [0130])**; and mapping means for mapping said first format to a second format according to a second file system used on said record carrier **(see [0132])**; wherein said mapping means is adapted to reserve space on the record carrier for an image of said first file system in the logical specification of said second format **(see [0096]-[0100])**, wherein said mapping means is further adapted to split said image of said first file system into different categories based on properties of data structures, and to store said split file components in different files of said second file system **(see [0034] and [0044]-[0045])**,

and wherein said mapping means is arranged to mount said second file system on said record carrier and to translate said second file system in a memory means into equivalent structures of said first file system **(see [0133])**. Bradley fails to disclose said mapping means is arranged to apply a defect management to said reserved space. All storage mediums are subject to faults, and often times there are a number of sectors which are not capable of storing data. At format time these deficiencies are detected and the mapping of the file system routes storage request around these bad areas. The next problem is when a defective sector is found on an active drive. Reformatting to detect these bad sectors again is not a viable option. To work with this problem, defect management is implemented to remap data to a set of reserved sectors that are used to replace defective sectors found after format, and Office Notice is hereby taken. It would have been obvious to a person having ordinary skill in the art to which said subject matter pertains to have modified the system disclosed by Bradley to implement defect management to account for bad sectors that may be located during use of the storage medium so that the system can continue to reliable use the medium and "map out" the bad areas to prevent data corruption or loss. Bradley fails to disclose wherein said mapping means is arranged to store static data structures of said first file system in a file on said record carrier and volatile data structures of said first file system in said memory means. Fujimoto discloses that as the addressable size of memory increases, so must the data structures that map logical addresses to physical addresses. And also, this mapping structure is stored in RAM, volatile memory, to allow fast access to the data structure and to allow changing the data structure easier and faster. Since the

available space in RAM is limited, and the memory is expensive, there will be a point where it is no longer feasible to keep increasing the amount of available RAM to hold the mapping tables (see column 1, line 40 thru column 2, line 15). Therefore, Fujimoto maintains multiple mapping tables and enough RAM space to hold at least one, but fewer than all, of the mapping tables. The table that is currently being used to perform mapping functions is stored in the RAM, since this table requires fast access and could change based on the manipulations to the files. The remaining tables are stored in the non-volatile memory, since they are not needed and therefore would waste valuable memory resources. It would have been obvious to a person having ordinary skill in the art to which said subject matter pertains to have modified the system disclosed by Bradley, to store the volatile data structures in memory, to allow fast access to the data structures that are currently being used and may change rather than waiting for the changes to be written to the secondary storage, and to stored the data structures that are not being used and will not change in the non-volatile storage so as not to waste valuable memory resources, as taught by Fujimoto. The combination of Bradley and Fujimoto still fail to disclose said mapping means is further adapted to shift a location of frequently updated data on said record carrier. The Universal Disk Format (UDF) contains a technique in which wear leveling is implemented. A VAT build of UDF was released that performs this wear leveling. Optical media has a limited number of times in which each sector can be erase and rewritten. After this time has passed, the sector will start to wear out and the data stored there will be unreliable. VAT spreads out the writing across the disk to evenly wear the disk to get the most writes, and rewrites,

possible. The frequently updated data therefore get shifted around on the disk to implement this wear leveling (see pages 3-5). It would have been obvious to a person having ordinary skill in the art to which said subject matter pertains to have modified the system disclosed by Bradley and Fujimoto, to shift the frequently updated data on the record carrier to implement a type of wear leveling so as not to wear our the sectors by repeated updates, as disclosed by UDF.

As per claim 11: wherein said image of said first file system corresponds to a single file of said second file system **(see [0034] and [0044]-[0045], if there was only one category of data stored in the file system, then there would be only one class of data created and therefore only one file)**.

As per claim 12: wherein said device provides access to files of said second file system via said interface means by hosts which do not know said second file system **(see [0110])**.

As per claim 13: wherein said second file system is interpreted by said mapping means which is arranged to write equivalent structures of said first file system to said record carrier **(see [0108])**.

As per claim 16: wherein said different categories comprise at least one of a robust allocation class and a volatile allocation class for file structures **(see [0034])**.

As per claim 22: wherein said mapping means is arranged to provide a dynamic mapping between data structures of said first file system and data structures of said second file system **(see [0132])**.

As per claim 23: Bradley discloses a method of reading from or writing to a record carrier, said method comprising the steps of: outputting or inputting data using a first format according to a first file system **(see figure 6, element 604 and [0130])**; and mapping said first format to a second format according to a second file system used on said record carrier **(see [0132])**; reserving space on the record carrier for an image of said first file system in the logical specification of said second format **(see [0096]-[0100])**; splitting said image of said first file system into different categories based on properties of data structures **(see [0034] and [0044]-[0045])**; storing said split file components in different files of said second file system **(see [0034] and [0044]-[0045])** wherein the mapping step is arranged to treat said reserved space as a partition of said first file system **(see [0135], the mount command is used to attach file systems, e.g. partitions, of a hard drive to the Unix system file system tree. Therefore when using a Unix system, the reserved space will be treated as a partition when implementing the mount/unmount commands)**, wherein said mapping step includes the steps of: mounting said second file system on said record carrier and to translate said second file system in a memory unit into equivalent structures of said first file system **(see [0133])**. Bradley fails to disclose wherein said mapping means is arranged to store static data structures of said first file system in a file on said record carrier and

volatile data structures of said first file system in said memory means. Fujimoto discloses that as the addressable size of memory increases, so must the data structures that map logical addresses to physical addresses. And also, this mapping structure is stored in RAM, volatile memory, to allow fast access to the data structure and to allow changing the data structure easier and faster. Since the available space in RAM is limited, and the memory is expensive, there will be a point where it is no longer feasible to keep increasing the amount of available RAM to hold the mapping tables (see column 1, line 40 thru column 2, line 15). Therefore, Fujimoto maintains multiple mapping tables and enough RAM space to hold at least one, but fewer than all, of the mapping tables. The table that is currently being used to perform mapping functions is stored in the RAM, since this table requires fast access and could change based on the manipulations to the files. The remaining tables are stored in the non-volatile memory, since they are not needed and therefore would waste valuable memory resources. It would have been obvious to a person having ordinary skill in the art to which said subject matter pertains to have modified the system disclosed by Bradley, to store the volatile data structures in memory, to allow fast access to the data structures that are currently being used and may change rather than waiting for the changes to be written to the secondary storage, and to stored the data structures that are not being used and will not change in the non-volatile storage so as not to waste valuable memory resources, as taught by Fujimoto. The combination of Bradley and Fujimoto still fail to disclose said mapping means is further adapted to shift a location of frequently updated data on said record carrier. The Universal Disk Format (UDF) contains a technique in

which wear leveling is implemented. A VAT build of UDF was released that performs this wear leveling. Optical media has a limited number of times in which each sector can be erase and rewritten. After this time has passed, the sector will start to wear out and the data stored there will be unreliable. VAT spreads out the writing across the disk to evenly wear the disk to get the most writes, and rewrites, possible. The frequently updated data therefore get shifted around on the disk to implement this wear leveling (see pages 3-5). It would have been obvious to a person having ordinary skill in the art to which said subject matter pertains to have modified the system disclosed by Bradley and Fujimoto, to shift the frequently updated data on the record carrier to implement a type of wear leveling so as not to wear our the sectors by repeated updates, as disclosed by UDF.

As per claim 24: wherein said mapping means is arranged to treat said reserved space as a partition of said first file system **(see [0135], the mount command is used to attach file systems, e.g. partitions, of a hard drive to the Unix system file system tree. Therefore when using a Unix system, the reserved space will be treated as a partition when implementing the mount/unmount commands)**.

Claims 2-3, 7, and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bradley (U.S. Patent Application Publication #2002/0065810), Fujimoto (U.S. Patent #6,377,500) and Universal Disk Format (http://www.absoluteastronomy.com/topics/Universal_Disk_Format) as applied to claims

1, 4-6, 10-13, 16, and 22-24 above, and further in view of well known practices in the art.

As per claim 2: Bradley discloses all the limitations of claim 1 as discussed above. Bradley does not explicitly teach that said interface means is a standard interface for storage devices. Standard interfaces for storage devices were well known in the art at the time the invention was made. Providing a device to access the rotating media with a standard interface would provide the greatest compatibility for using the device in a computer system, and Official Notice is hereby taken. It would have been obvious to a person having ordinary skill in the art to which said subject matter pertains to have modified the system disclosed by Bradley to use a standard interface for the rotating media device to provide the greatest compatibility among computer systems.

As per claims 3 and 7: Ando discloses all the limitations of claim 1 as discussed above. Bradley fails to disclose said standard interface is a PCMCIA, Compact Flash, or MMCA interface. PCMCIA interfaces were well known in the art at the time the invention was made. Providing the storage device with a PCMCIA interface would allow the device to also be portable and useable with laptop computers, since the PCMCIA port was common on laptops and was the main port were expansion devices were connected, and Official Notice is hereby taken. It would have been obvious to a person having ordinary skill in the art to which said subject matter pertains to have modified the system disclosed by Bradley to provide the storage device with a PCMCIA port to allow the device to be portable and useable with laptop computers.

As per claim 18: Bradley discloses all the limitations of claims 1 and 17 as discussed above. Bradley fails to disclose that the memory means is a non-volatile memory. Bradley discloses loading the super-block into memory, see [0133], which will change as the consumer system updates the data. If the system were to lose power, then all the data that was updated is also lost. It was well known in the art at the time the invention was made to utilize non-volatile memory in instances where data is to be protected during loss of power, and Official Notice is hereby taken. It would have been obvious to a person having ordinary skill in the art to which said subject matter pertains to have modified the system disclosed by Bradley, to load the super-block into non-volatile memory so that any updates that are made to the data are not lost in the event that the host system loses power before the data can be transferred back to disk storage.

As per claim 19: wherein said second file system is updated by said device when said record carrier is ejected **(see [0135], since the file system is mounted when the requester has a Unix based file system, before the device can be removed from the system, e.g. ejected, the device must first be un-mounted. During this un-mount process any data structures that are in memory that have been updated are written back to the storage media. Therefore it is inherent that the file system would be updated when said record carrier is ejected)**.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bradley (U.S. Patent Application Publication #2002/0065810) in view of Orcutt (U.S. Patent

#6,377,958), Fujimoto (U.S. Patent #6,377,500), Universal Disk Format (http://www.absoluteastronomy.com/topics/Universal_Disk_Format) and well known practices in the art.

As per claim 14: Bradley discloses a drive device for a record carrier, said drive device comprising: interface means for providing a first format for inputting or outputting data according to a first file system **(see figure 6, element 604 and [0130])**; and mapping means for mapping said first format to a second format according to a second file system used on said record carrier **(see [0132])**; wherein said mapping means is adapted to reserve space on the record carrier for an image of said first file system in the logical specification of said second format **(see [0096]-[0100])**, wherein said mapping means is further adapted to split said image of said first file system into different categories based on properties of data structures, and to store said split file components in different files of said second file system **(see [0034] and [0044]-[0045])**, and wherein said mapping means is arranged to mount said second file system on said record carrier and to translate said second file system in a memory means into equivalent structures of said first file system **(see [0133])**. Bradley fails to disclose said mapping means is adapted to convert a file of said first file system into clusters of a predetermined size which corresponds to a packet size of said second file system and to align said cluster with packets of said second file system. Orcutt discloses that different file systems may have different cluster sizes, and when converting between the two the cluster will have to be resized to match one of the file systems **(see column 16, lines 44-52)**. Another issue when storing data is fragmentation. Internal fragmentation

occurs when a cluster or sector is not completely filled with data. This often occurs at the ends of files when there is just a little bit of data left to store, but not a whole sector or clusters worth. The problem with internal fragmentation is that this area is unusable to the file system, and there is almost no way to reclaim it. The exception being that if the file is altered and becomes longer, the file can then expand and fill that last cluster or sector. Official Notice of this is hereby taken. Therefore, it would have been obvious to one of ordinary skill in the art to modify the system disclosed by Bradley to align the clusters and packets, and to resize the clusters into a size that corresponds with a size of the packets to reduce internal fragmentation and get the most efficient use of the storage area. Bradley fails to disclose wherein said mapping means is arranged to store static data structures of said first file system in a file on said record carrier and volatile data structures of said first file system in said memory means. Fujimoto discloses that as the addressable size of memory increases, so must the data structures that map logical addresses to physical addresses. And also, this mapping structure is stored in RAM, volatile memory, to allow fast access to the data structure and to allow changing the data structure easier and faster. Since the available space in RAM is limited, and the memory is expensive, there will be a point where it is no longer feasible to keep increasing the amount of available RAM to hold the mapping tables (see column 1, line 40 thru column 2, line 15). Therefore, Fujimoto maintains multiple mapping tables and enough RAM space to hold at least one, but fewer than all, of the mapping tables. The table that is currently being used to perform mapping functions is stored in the RAM, since this table requires fast access and could change based on the

manipulations to the files. The remaining tables are stored in the non-volatile memory, since they are not needed and therefore would waste valuable memory resources. It would have been obvious to a person having ordinary skill in the art to which said subject matter pertains to have modified the system disclosed by Bradley, to store the volatile data structures in memory, to allow fast access to the data structures that are currently being used and may change rather than waiting for the changes to be written to the secondary storage, and to stored the data structures that are not being used and will not change in the non-volatile storage so as not to waste valuable memory resources, as taught by Fujimoto. The combination of Bradley and Fujimoto still fail to disclose said mapping means is further adapted to shift a location of frequently updated data on said record carrier. The Universal Disk Format (UDF) contains a technique in which wear leveling is implemented. A VAT build of UDF was released that performs this wear leveling. Optical media has a limited number of times in which each sector can be erase and rewritten. After this time has passed, the sector will start to wear out and the data stored there will be unreliable. VAT spreads out the writing across the disk to evenly wear the disk to get the most writes, and rewrites, possible. The frequently updated data therefore get shifted around on the disk to implement this wear leveling (see pages 3-5). It would have been obvious to a person having ordinary skill in the art to which said subject matter pertains to have modified the system disclosed by Bradley and Fujimoto, to shift the frequently updated data on the record carrier to implement a type of wear leveling so as not to wear our the sectors by repeated updates, as disclosed by UDF.

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bradley (U.S. Patent Application Publication #2002/0065810), Fujimoto (U.S. Patent #6,377,500) and Universal Disk Format (http://www.absoluteastronomy.com/topics/Universal_Disk_Format), and well known practices in the art as applied to claims 18-19 above, and further in view of MRAM (http://en.wikipedia.org/wiki/MRAM).

As per claim 20: the combination of Bradley and well known practices in the art disclose all the limitations of claims 1 and 17-19 as discussed above. The combination fails to disclose that said non-volatile memory is an MRAM. MRAM is another type of non-volatile memory and provides the advantages of speeds similar to SRAM, density similar to DRAM, and no degradation over time as in flash memories **(see MRAM, "Overall")**. It would have been obvious to a person having ordinary skill in the art to which said subject matter pertains to have modified the combination of Bradley and well known practices in the art to use MRAM, to gain the advantages of speeds similar to SRAM, density similar to DRAM, and no degradation over time as in flash memories, as disclosed by MRAM.

## *Allowable Subject Matter*

Claim 25 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edward J. Dudek whose telephone number is 571-270-1030. The examiner can normally be reached on Mon thru Thur 7:30-5:00pm Sec. Fri 7:30-4 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Kim can be reached on 571-272-4182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Matt Kim/
Supervisory Patent Examiner, Art Unit 2186

/E. J. D./
Examiner, Art Unit 2186
June 15, 2009